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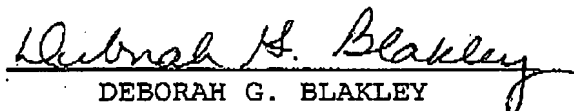
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**Remarks:**

In re application of	:	
Donald T. Cronic	:	
Attorney Docket No.: 84333	:	Art Unit: 1746
Serial No.: 10/675,598	:	
Filed: September 26, 2003	:	Examiner: Bruce F.
For: USING SOLIDS AS PEROXIDE	:	Bell
SOURCE FOR FUEL CELL APPLICA-	:	
TIONS, PROCESS AND PRODUCT	:	
THEREOF	:	

Faxed herewith please find a Transmittal Form, Fee Transmittal and Appeal Brief for referenced application.

PTO/SB/21 (09-04)

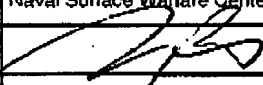
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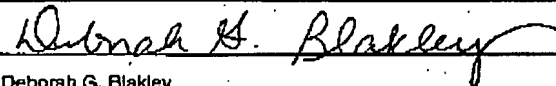
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<b>TRANSMITTAL FORM</b>  (to be used for all correspondence after initial filing)	Application Number	10/675,598	
	Filing Date	September 28, 2003	
	First Named Inventor	Donald T. Cronco	
	Art Unit	1746	
	Examiner Name	Bruce F. Bell	
Total Number of Pages in This Submission	20	Attorney Docket Number	Navy Case 84333

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<input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement  <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Reply to Missing Parts/Incomplete Application <input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation <input type="checkbox"/> Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____ <input type="checkbox"/> Landscape Table on CD	<input type="checkbox"/> After Allowance Communication to TC <input checked="" type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input checked="" type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): Appeal Brief
Remarks Appeal Brief under 37 CFR 41.37 for April 30, 2007 Notice of Appeal Fee Transmittal under 37 CFR 41.20(b)(2)		
SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT		
Firm Name	Naval Surface Warfare Center - Dahlgren Division	
Signature		
Printed name	Gerhard W. Thielman	
Date	June 21, 2007	Reg. No. 43,186

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**FEE TRANSMITTAL**  
**For FY 2006**☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 500.00

**Complete if Known**

Application Number	10/675,598
Filing Date	September 26, 2003
First Named Inventor	Donald T. Cronce
Examiner Name	Bruce F. Bell
Art Unit	1746
Attorney Docket No.	Navy Case 84333

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Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

**2. EXCESS CLAIM FEES****Fee Description**

Each claim over 20 (including Reissues)

Fee (\$)

Small Entity Fee (\$)

50

25

Each independent claim over 3 (including Reissues)

200

100

Multiple dependent claims

360

180

Total Claims Extra Claims Fee (\$)

Fee Paid (\$)

Multiple Dependent Claims

Fee (\$)

Fee Paid (\$)

- 20 or HP = \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims Extra Claims Fee (\$)

Fee Paid (\$)

- 3 or HP = \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_

HP = highest number of independent claims paid for, if greater than 3.

**3. APPLICATION SIZE FEE**

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
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**4. OTHER FEE(S)**

Non-English Specification, \$130 fee (no small entity discount)

Fees Paid (\$)

Other (e.g., late filing surcharge): 37 CFR 41.20(b)(2) \$500

500

**SUBMITTED BY**

Signature	Registration No. 43,186	Telephone 540-653-8061
Name (Print/Type) Gerhard W. Thielman	(Attorney/Agent)	Date June 21, 2007

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JUN 21 2007

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

Appellant : Donald T. Cronic

Serial No. : 10/675,598

Filed : September 26, 2003

Examiner : Bruce F. Bell

Docket : Navy Case 84333

Title : USING SOLIDS AS PEROXIDE SOURCE FOR FUEL CELL  
APPLICATIONS, PROCESS AND PRODUCT THEREOF

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P.O. Box 1450  
Alexandria, VA 22313-1450

BRIEF ON APPEAL UNDER 37 CFR §41.37

Appeal from Group 1746

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Navy Case No. 84333  
Application No. 10/675,598

**I. REAL PARTY IN INTEREST**

The Real Party in Interest for this Appeal and the present application is the Government of the United States of America, as represented by the Secretary of the Navy, by way of an assignment recorded in the U.S. Patent and Trademark Office at Reel 015240, Frame 0150.

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Application No. 10/675,598

**II. STATEMENT OF RELATED APPEALS AND INTERFERENCES**

There are no pending or prior Appeals or Interferences, known to Appellant, Appellant's representative or the assignee, that may be related to, or which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending Appeal. Consequently, related proceedings identify "none" in Appendix C.

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**III. STATUS OF CLAIMS**

Claims 1-9 and 12-20 are pending, finally rejected and on appeal.

No claims are allowed, and no claims are objected to only for being dependent from a rejected base claim, but otherwise allowable. No claims are withdrawn from prosecution.

The original set of claims 1-20 was published in U.S. Patent Application Publication 2005/0066662 on March 31, 2005. Claims 10 and 11 were cancelled in the October 26, 2006 Amendment.

No claims are cancelled, amended or added for purposes of this appeal. A listing of the pending claims is provided in Appendix A.



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**IV. STATUS OF AMENDMENTS**

An Amendment After Final Rejection was filed March 13, 2007, subsequent to the close of prosecution by the December 29, 2006 Final Office Action to correct a minor informality in claim 18. The Amendment was entered for purposes of Appeal as indicated by the April 4, 2007 Advisory Action.

The October 26, 2006 Amendment amended claims 1-9 and 12-19 to recite features supported in the specification at, for example, page 6, line 1 – page 11, line 5 (corresponding to paragraphs [0019] – [0025] of U.S. Patent Application Publication 2005/0066662) in response to the July 26, 2006 Office Action.

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**V. SUMMARY OF CLAIMED SUBJECT MATTER**

Appellant's claims are directed generally, for example, to a power generation system recited in claim 1. Additionally, claim 12 recites a process for releasing energy. The independent claims are directed to chemical energy release for a power generation system in which a solid impellant (210) is decomposed in a decomposition chamber (212) with a solvent to release thermal energy. A steam turbine (214) converts the thermal energy into mechanical energy to drive a shaft (218) for work output to, for example, a thruster (220). A thermoelectric generator (216) converts the thermal energy into electrical energy to power a direct current motor (222). See, *e.g.*, the specification at page 8 line 5 – page 9 line 7 (corresponding to published paragraphs [0021] – [0022]) and FIGs. 1-2.

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**VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

The following single ground of rejection is presented for review:

The December 29, 2006 Final Office Action rejects claims 1-9 and 12-20 as being allegedly obvious and thereby unpatentable under 35 U.S.C. §103(a) over U.S. Patent 6,255,009 to Rusek *et al.* (hereinafter "Rusek") in view of U.S. Patent 4,867,902 to Russell *et al.* (hereinafter "Russell").

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## VII. ARGUMENT

Appellant respectfully submit that Examiner Bell misinterprets the applied references (a) as teaching all of the claim limitations recited, and (b) regarding alleged motivation by an artisan of ordinary skill to combine their teachings. In particular, Appellant asserts that the applied references Rusek and Russell cannot be properly combined and do not teach or suggest all of the claimed features. Thus, Appellant respectfully traverses the rejection under 35 U.S.C. §103.

### A. Claimed Features

The independent claims are directed to power generation by chemical decomposition described in the specification, *e.g.*, at page 8 line 5 – page 9 line 7 (corresponding to published paragraphs [0021] – [0022]) and FIGs. 1-2. Appellant's claims are directed generally, for example, to a system and a process for such power generation by decomposition of a solid impellant.

The independent claims are directed to chemical energy release for a power generation system in which a solid impellant (210) is decomposed in a decomposition chamber (212) with a solvent to release thermal energy. A steam turbine (214) converts the thermal energy into mechanical energy to drive a shaft (218) for work output to, for example, a thruster (220). A thermoelectric generator (216) converts the thermal energy into electrical energy to power a direct current motor (222).

In particular, Appellant's independent claim 1 recites a system for power generation including, *inter alia*, "a decomposition chamber; a solid impellant material containing at least one of a peroxide and a superoxide; a solvent in the decomposition chamber to liquefy and chemically decompose the solid impellant material, thereby releasing thermal energy; a power generator to convert the thermal energy into at least one of mechanical energy and electrical energy; and a power transmission to transfer the converted energy for performing work."

Further, claim 12 recites a process for releasing energy including, *inter alia*, "providing a decomposition chamber containing a solvent; dissolving a solid impellant material containing at least one of a peroxide and a superoxide; solubilizing the solid impellant material in the solvent to liquefy and chemically decompose the solid impellant material into a liquefied peroxide for releasing thermal energy, converting the thermal energy into at least one of mechanical energy and electrical energy, and transferring the converted energy for performing work."

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### B. Reference Teachings

Instead, Rusek discloses a power generation method using hydrogen peroxide decomposition and as noted in Appellant's specification at page 5 lines 6-12 (published paragraph [0017]). In particular, Rusek teaches an electrolytic hydrogen peroxide ( $H_2O_2$ ) producer 20 to convert seawater 10 to be filtered in a purifier 50 and stored in a holding tank 60 for subsequent disposition via a valve 65 to a catalytic decomposition chamber 70. The hydrogen peroxide can be applied to a thermoelectric generator 80 steam turbine 90 or other applications. See *e.g.*, col. 4, lines 23-32, 57-62; col. 5, lines 28-45 and Fig. 2 of Rusek. There is no teaching or suggestion in Rusek for replacing hydrogen peroxide with a solid material and additionally dissolving this material with a solvent, as provided in Appellant's claims.

Further, Russell discloses encapsulation of alkali superoxide particles with a thin polymer coating to attenuate an oxygen-generating reaction. See *e.g.*, col. 3, lines 20-60 of Russell. This superoxide may form solid particles or liquid droplets (lines 14-15). In addition, Russell swelling and exfoliation of the microcapsule wall (lines 47-57), rather than dissolving a solid impellant into a solvent to produce liquefied peroxide, as provided in claim 12. Appellant respectfully submits that Rusek and Russell do not describe or suggest at least these claimed features of independent claims 1 and 12.

Although Russell identifies the reaction of potassium superoxide in water as sufficiently exothermic to conventionally require heat exchangers for thermal dissipation, this represents waste heat as an undesired by-product of the reaction for the purpose of oxygen generation. See *e.g.*, col. 1, lines 44-64 of Russell. Thus, by observing thermal energy that is undesirable for the intended purpose, Russell teaches away from Appellant's claimed features for converting thermal energy to produce electrical power.

### C. Lack of Motivation to Combine

Further, there is no motivation to combine features related to the power generator of Rusek with the oxygen producer of Russell. Their respective teachings focus on concerns completely unrelated to the other. In fact, their incompatibility engenders rejection of their combination, as Russell seeks to dissipate thermal energy, whereas Rusek desires to convert and use that source for power. Moreover, the Final Office Action has not established proper motivation for a *prima facie* case of obviousness. The applied references address separate endeavors and approach their respective chemically-based solutions without providing any reasonable justification for an artisan of ordinary skill to combine their respective teachings,

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even to address the same problem as the Appellant, much less to achieve the congregation of elements in the claims.

Even assuming that motivation to combine the applied references were to be established, the combination fails to teach or suggest all of Appellant's claimed features, as discussed *supra*. No evidence is needed for presentation, and thus identifies "none" in Appendix B. Neither Rusek nor Russell teaches a solid impellant for producing power, and nothing in their teachings suggests that their combination would be advantageous or yield such a material having such claimed properties. Further, the applied references do not address dissolving the impellant in a solvent to produce liquid peroxide. In particular, Rusek begins and ends with such (at room temperature operation), and thus has no need for a solvent. Also, the moisture exposure of Russell affects the coating, rather than the oxygen-producing core.

The Final Office Action admits, at page 4, that Rusek fails to expressly teach that "the peroxide is solid", and relies on Russell to compensate for this deficiency. The Final Office Action asserts at page 5 (and reiterated in the Advisory Action) that Russell teaches that "solid impellants of peroxides and superoxides exist as a core material coated with a polymer to slow down the reaction of water with the peroxide or superoxide so that less exothermic heat is produced to prevent carbonate sludge from being formed and controlled release of the oxygen is obtained."

Appellant responds that this reiterates the rationale against an artisan of ordinary skill combining Russell with Rusek absent impermissible hindsight. In particular and as explained *supra*, Russell seeks to mitigate heat production, which is contrary to the objective of both Rusek and Appellant. Further, Rusek fails to teach a solid impellant, as acknowledged in the Final Office Action, in spite of the advantages for select operations, such as improved safety and storability, provided by Appellant's claimed features. Moreover, Russell does not compensate for this deficiency because (a) its polymer coating does not constitute an impellant and (b) regulating heat and slag production by restricting exposure of the alkali superoxide particles contradicts the intent of providing power generation on demand.

Thus, Appellant contends that the applied references, Rusek and Russell, lack any suggestion for synthesizing their respective teachings, particularly in the context of power generation. Appellant submits that even if an artisan of ordinary skill would contemplate combining the applied references in some manner, any such combination remains deficient concerning the claimed features.

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A *prima facie* case of obviousness for a §103 rejection requires satisfaction of three basic criteria: there must be some suggestion or motivation either in the references or knowledge generally available to modify the references or combine reference teachings, a reasonable expectation of success, and the references must teach or suggest all the claim limitations. See MPEP §706.02(j). Appellant respectfully submits that the Final Office Action fails to satisfy these criteria based on Rusek and Russell, and thus does not satisfy this burden for rejecting the claims under §103 over the applied references. Accordingly, the Final Office Action has not established a proper motivation to combine Rusek and Russell for a *prima facie* case of obviousness.

For at least these reasons, Appellant respectfully submits that the independent claims are patentable over the applied references. The dependent claims are likewise patentable over the applied references for at least the reasons discussed, as well as for the additional features they recite. Consequently, all the claims are in condition for allowance. Thus, Appellant respectfully submits that the rejection under 35 U.S.C. §103 is improper and should be reversed and withdrawn.

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**VIII. CONCLUSION**

For all of the reasons discussed above, it is respectfully submitted that the rejections are in error and that claims 1-9 and 12-20 are in condition for allowance. For all of the above reasons, Appellant respectfully requests this Honorable Board to reverse the rejections of claims 1-9 and 12-20 and pass this application to issue.

Respectfully submitted,



Gerhard W. Thielman  
Registration No. 43,186

Filed: June 21, 2007

**Attachments:**

- Appendix A – Claims Involved in the Appeal
- Appendix B – Evidence
- Appendix C – Related Proceedings

DEPARTMENT OF THE NAVY  
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Navy Case No. 84333  
Application No. 10/675,598

**APPENDIX A – CLAIMS INVOLVED IN THE APPEAL:**

1. A power generation system, comprising:
  - a decomposition chamber;
  - a solid impellant material containing at least one of a peroxide and a superoxide;
  - a solvent in the decomposition chamber to liquefy and chemically decompose the solid impellant material, thereby releasing thermal energy;
  - a power generator to convert the thermal energy into at least one of mechanical energy and electrical energy; and
  - a power transmission to transfer the converted energy for performing work.
2. The power generation system of claim 1, wherein the power generator comprises at least one of a steam turbine, a thermoelectric generator, and a propulsion engine.
3. The power generation system of claim 2, wherein the power transmission comprises at least one of a shaft, an electric generator, and an electric motor.
4. The power generation system of claim 1, wherein the solid impellant material comprises at least one of sodium peroxide, potassium peroxide, lithium peroxide, potassium superoxide, urea peroxide, sodium perborate, peracetic acid, peracetic salt, persulfate acid, persulfate salt, peroxide adduct, percarbonate acid, and percarbonate salt.
5. The power generation system of claim 4, wherein the solid impeller material comprises at least one of sodium peroxide, potassium peroxide, and potassium superoxide.
6. The power generation system of claim 5, wherein the solid impeller material comprises potassium superoxide.
7. The power generation system of claim 1, wherein the solvent comprises at least one of water, polar organic alcohols, and polar organics.

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8. The power generation system of claim 7, wherein the solvent comprises at least one of water, propylene glycol, ethanol, methanol, and isopropanol.
9. The power generation system of claim 8, wherein the solvent comprises water.
12. A process for releasing energy in an energy source, comprising:  
providing a decomposition chamber containing a solvent;  
dissolving a solid impellant material containing at least one of a peroxide and a superoxide;  
solubilizing the solid impellant material in the solvent to liquefy and chemically decompose the solid impellant material into a liquified peroxide for releasing thermal energy;  
converting the thermal energy into at least one of mechanical energy and electrical energy; and  
transferring the converted energy for performing work.
13. The process of claim 12, wherein the solid impeller material comprises at least one of peroxide, superoxide and combinations thereof.
14. The process of claim 12, wherein the solid impeller material comprises at least one of sodium peroxide, potassium peroxide, lithium peroxide, potassium superoxide, urea peroxide, sodium perborate, peracetic acid, peracetic salt, persulfate acid, persulfate salt, peroxide adduct, percarbonate acid, and percarbonate salt.
15. The process of claim 14, wherein the solid impeller material comprises at least one of sodium peroxide, potassium peroxide, and potassium superoxide.
16. The process of claim 15, wherein the solid impeller material comprises potassium peroxide.

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17. The process of claim 12, wherein the solvent comprises at least one of water, polar organic alcohols, and polar organics.
18. The process of claim 17, wherein the solvent comprises at least one of water, propylene glycol, ethanol, methanol, and isopropanol.
19. The process of claim 18, wherein the solvent comprises water.
20. A power generation product produced by the process of claim 12.

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**APPENDIX B – EVIDENCE:**

None.

B-1

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**APPENDIX C – RELATED PROCEEDINGS:**

None.